

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application Transmittal

Assistant Commissioner of Patents
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the **Patent Application** of:

Inventor: Thomas Richaard Haynes

For: Method and System for Indicating Document Traversal Direction in a Hyper Linked Navigation System

Enclosed are:

- ☒ Three (3) sheets of drawings.
- ☒ An assignment of the invention to International Business Machines Corporation, Armonk, New York 10504.
- ☐ A certified copy of a _____ application.
- ☐ An associate power of attorney.
- ☒ Declaration and Power of Attorney for Patent Application

The filing fee has been calculated as shown below:

	(Col. 1)	(Col. 2)
For:	No. Filed	No. Extra
Basic Fee		
Total Claims	18 -20 =	0
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<input type="checkbox"/> Multiple Dependent Claim Presented		

Surcharge-Late Filing Fee or Oath or Declaration

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\$260.00	\$.00
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- ☒ Any additional filing fees required under 37 C.F.R. §1.16.
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Date: July 19, 2000

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Thomas Richard Haynes

Serial No.: Group No.:

Filed: Herewith

For: Method and System for Indicating Document Traversal Direction in a Hyper Linked Navigation System

Assistant Commissioner of Patents
Washington, D.C. 20231

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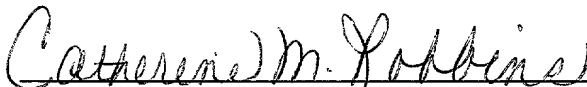
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1. Patent Application Transmittal (In duplicate)
2. Declaration and Power of Attorney
3. Recordation and Assignment
3. Patent Application (14 pages)
4. Drawings (3 sheets)
5. Information Disclosure Statement & Form PTO-1449 & 9 references.
6. Business Reply Post Card

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00619556-1071900

METHOD AND SYSTEM FOR INDICATING DOCUMENT TRAVERSAL DIRECTION IN A HYPER LINKED NAVIGATION SYSTEM

Field of the Invention

This invention relates in general to computer software, and in particular to a method and system for indicating a document traversal direction in a hyper linked navigation system.

Background of the Invention

In the modern networked world of the Internet and World Wide Web, users are accustomed to changing browser views by clicking on 'jump' objects (hyperlinks). Often these jumps result in a view on a new object orthogonal to the original object (un-related in a contextual manner). For instance, the user might be perusing some business e-commerce web site that happens to list links to 'related sites'. The user might click on one and be taken to a storefront for a totally different company.

Sometimes, however, a hyperlink takes the user to another place in the same superset object. For instance, the user might be reading a chapter in an online book. The link might be to another section of the book, however, the user has no way of knowing whether the link will take him BACK or FORWARD in the book.

One of the great capabilities of information in a networked world is the ability of a user to easily jump amongst spots in a view of an object, without the need to traverse in a more linear fashion through the object. However, in the case of an online book, sometimes the user would like to know before making the 'leap' (following the link), which direction he will be going in a linear view of the book. The user might not want to follow the link if it would take him forward, since he might be reading the book "the old-fashioned" way (front to back). However, if the link takes him backward, he might want to follow it, to re-enforce some concept he has already seen but perhaps not sufficiently remembered.

Summary of the Invention

A method, system and computer program product for navigating within a web site is provided. A direction indicator is installed relative to a link shown on a web page within the web site. The direction indicator is surfaced prior to selection of the link in order to inform the user whether the link will take the user forward or backward within the web site. In one embodiment, the direction indicator comprises an arrow. The arrow points upward to indicate movement backward within the web site, and the arrow points downward to indicate movement forward within the web site. Surfacing the direction indicator may be accomplished by hovering a pointing device over the link.

In one embodiment, the user is provided with a toggle capability that will only allow an indicator in one direction, i.e. the link will only activate if the user is taken backward. One example of installing an indicator comprises extending an HTML tag language by adding an attribute for an HTML BODY tag.

These and other features, aspects, and advantages of the present invention will become better understood with reference to the following description, appended claims, and accompanying drawings.

Brief Description of the Drawings

For a more complete understanding of the present invention and for further advantages thereof, reference is now made to the following Detailed Description taken in conjunction with the accompanying drawings, in which:

Figure 1 is a pictorial representation of a data processing system in which the present invention may be implemented;

Figure 2 is a block diagram of a data processing system in which the present invention may be implemented;

Figure 3 illustrates navigation techniques known in the prior art; and

Figure 4 illustrates the present invention.

Detailed Description of the Invention

With reference now to the figures and in particular with reference to Figure 1, a pictorial representation of a data processing system in which the present invention may be implemented is depicted in accordance with a preferred embodiment of the present invention. A computer 100 is

depicted which includes a system unit 110, a video display terminal 102, a keyboard 104, storage devices 108, which may include floppy drives and other types of permanent and removable storage media, and mouse 106. Additional input devices may be included with personal computer 100, such as, for example, a joystick, touchpad, touch screen, trackball, microphone, and the like. Computer 100 can be implemented using any suitable computer, such as an IBM RS/6000 computer or IntelliStation computer, which are products of International Business Machines Corporation, located in Armonk, New York. Although the depicted representation shows a computer, other embodiments of the present invention may be implemented in other types of data processing systems, such as a network computer or such as other web-enabled devices such as hand-held wireless PDA's and cell phones. Computer 100 also preferably includes a graphical user interface that may be implemented by means of systems software residing in computer readable media in operation within computer 100.

With reference now to Figure 2, a block diagram of a data processing system is shown in which the present invention may be implemented. Data processing system 200 is an example of a computer, such as computer 100 in Figure 1, in which code or instructions implementing the processes of the present invention may be located. Data processing system 200 employs a peripheral component interconnect (PCI) local bus architecture. Although the depicted example employs a PCI bus, other bus architectures such as Accelerated Graphics Port (AGP), Industry Standard Architecture (ISA), and Extended Industry Standard Architecture (EISA), may be used. Processor 202 and main memory 204 are connected to PCI local bus 206 through PCI bridge 208. PCI bridge 208 also may include an integrated memory controller and cache memory for processor 202. Additional connections to PCI local bus 206 may be made through direct component interconnection or through add-in boards. In the depicted example, local area network (LAN) adapter 210, small computer system interface SCSI host bus adapter 212, and expansion bus interface 214 are connected to PCI local bus 206 by direct component connection. In contrast, audio adapter 216, graphics

adapter 218, and audio/video adapter 219 are connected to PCI local bus 206 by add-in boards inserted into expansion slots. Expansion bus interface 214 provides a connection for a keyboard and mouse adapter 220, modem 222, and additional memory 224. SCSI host bus adapter 212 provides a connection for hard disk drive 226, tape drive 228, and CD-ROM drive 230. Typical PCI local bus implementations will support three or four PCI expansion slots or add-in connectors.

An operating system runs on processor 202 and is used to coordinate and provide control of various components within data processing system 200 in Figure 2. The operating system may be a commercially available operating system such as Windows 2000, which is available from Microsoft Corporation. An object oriented programming system such as Java may run in conjunction with the operating system and provides calls to the operating system from Java programs or applications executing on data processing system 200. "Java" is a trademark of Sun Microsystems, Inc. Instructions for the operating system, the object-oriented operating system, and applications or programs are located on storage devices, such as hard disk drive 226, and may be loaded into main memory 204 for execution by processor 202.

Those of ordinary skill in the art will appreciate that the hardware in Figure 2 may vary depending on the implementation. Other internal hardware or peripheral devices, such as flash ROM (or equivalent nonvolatile memory) or optical disk drives and the like, may be used in addition to or in place of the hardware depicted in Figure 2. Also, the processes of the present invention may be applied to a multiprocessor data processing system.

For example, data processing system 200, if optionally configured as a network computer, may not include SCSI host bus adapter 212, hard disk drive 226, tape drive 228, and CD-ROM 230, as noted by dotted line 232 in Figure 2 denoting optional inclusion. In that case, the computer, to

be properly called a client computer, must include some type of network communication interface, such as LAN adapter 210, modem 222, or the like. As another example, data processing system 200 may be a stand-alone system configured to be bootable without relying on some type of network communication interface, whether or not data processing system 200 comprises some type of network communication interface. As a further example, data processing system 200 may be a Personal Digital Assistant (PDA) device, which is configured with ROM and/or flash ROM in order to provide non-volatile memory for storing operating system files and/or user-generated data.

The depicted example in Figure 2 and above-described examples are not meant to imply architectural limitations. For example, data processing system 200 also may be a notebook computer or hand held computer in addition to taking the form of a PDA. Data processing system 200 also may be a kiosk or a Web appliance.

The processes of the present invention are performed by processor 202 using computer implemented instructions, which may be located in a memory such as, for example, main memory 204, memory 224, or in one or more peripheral devices 226-230.

Referring now to Figure 3, the current art is illustrated. A web page 300 located at a URL 302 is shown. In order to navigate through the page 300, a user can (among other things) click on a link such as, for example, Themes, as generally indicated by reference numeral 304. Prior to clicking on the link, the user can 'hover' a mouse pointer over the link and be provided with the URL of the page that will be 'jumped' to by clicking thereon. In the illustrated example of Fig. 3, the user can see that the new URL 306 is located at the same site as the page 300. However, the user does not know whether the new page is 'forward' or 'backward' within the site. If the user is reading an online book, there may be no desire to jump forward and ruin the story. However, if the link goes

backward, there may be some information which the user would like to have refreshed. Under the prior art, this is not possible to determine other than by making the jump.

The present invention is an extension to the web information standards (e.g. HTML / XML) that would be honored by Internet browsers (e.g. Netscape). The extension would allow the user to know in advance whether a link would result in a forward or a backward movement. This indication could be provided in numerous ways, and the present invention is not limited to any one implementation solely. For purposes of explanation, one way for such an indicator would be to show an 'up' or a 'down' arrow in the status line text commonly displayed when a user hovers the mouse pointer over a link. This up or down arrow would tell the user which way he'll go in the book if he follows the link.

One way to extend the HTML tag language for a feature like this would be to add an attribute for the BODY tag such as 'DIRECTION=YES | NO'. If it is not present, assume NO. If it is tagged as YES, then when a user hovers the mouse over a tag, the browser will attempt a 'smart' estimate of whether the link takes the user forward or back. If the link is to another spot in the same .HTM file, this is an easy task. If it is to another file, then the HTML author will need to help the browser by providing some sort of meta-tagged profile of related files and their relative positioning. For instance, if a book is divided into 6 chapters, and each chapter has its own .HTM file, then there might be another new HTML tag that allows the author to express the relationship as follow:

<fileorder>

chapter1.htm;

chapter2.htm;

chapter3.htm;

```
chapter4.htm;  
chapter5.htm;  
chapter6.htm;  
</fileorder>
```

5 The browser knows that everything following the fileorder tag, until it's 'end' tag, is a list of ordered files separated by semicolons. Further, if a link in chapter 2 would take the user to a spot in chapter 4, it could now, based on the 'fileorder' statement, be determined with assurance that the link is a 'forward' link.

10 Additionally, by adding the ability for a user to toggle a setting that causes any link that is determined to be 'forward' to be "turned off", the user would be provided with the advantage of not being forced to pre-determine if a link is forward or backward. With this setting on, all links will either be backward or non-directive (orthogonal).

15 Referring to Figure 4, a direction indicator 400 has been added to the example as discussed in relation to Figure 3. In this example, when the user 'hovers' the mouse pointer over the link 304, the user can readily see by the indicator 400 that by following the link 304, the user will travel in a down linear direction. Thus, the user knows that the link goes forward in the text. Similarly, although not shown, the appearance of an up arrow would indicate that the user will travel in an upward linear direction. Thus, the user knows that the link goes backward in the text. Therefore, the advantage of the present invention to a user is quite obvious in that the user will know before selecting a link
20 whether the link goes forward or backward in the a web site.

Although the present invention has been described with respect to a specific preferred embodiment thereof, various changes and modifications may be suggested to one skilled in the art and it is intended that the present invention encompass such changes and modifications as fall within the scope of the appended claims.

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What is Claimed:

- 1 1. A method of navigating within a web site, comprising the steps of:
2 installing a direction indicator relative to a link shown on a web page within the web
3 site;

4 surfacing said direction indicator prior to selection of said link in order to inform the
5 user whether said link is forward or backward within said web site.

6 2. The method of Claim 1, wherein said step of installing a direction indicator includes
7 installing an arrow.

8 3. The method of Claim 2, wherein said arrow points upward to indicate movement
9 backward and said arrow points downward to indicate movement forward within the web site.

10 4. The method of Claim 1, wherein said step of surfacing said direction indicator
11 comprises hovering a pointing device over said link.

12 5. The method of Claim 1, wherein said step of installing further includes the step of
13 providing the user with a toggle capability to only allow an indicator in one direction.

1 6. The method of Claim 1, wherein said step of installing comprises the step of extending
2 an HTML tag language by addition of an attribute for an HTML BODY tag.

1 7. A system for navigating within a web site, comprising:

2 means for installing a direction indicator relative to a link shown on a web page within the
3 web site;

4 means for surfacing said direction indicator prior to selection of said link in order to inform
5 the user whether said link is forward or backward within said web site.

6 8. The system of Claim 7, wherein said means for installing a direction indicator includes
7 means for installing an arrow.

1 9. The system of Claim 8, wherein said arrow points upward to indicate movement
2 backward and said arrow points downward to indicate movement forward within the web site.

1 10. The system of Claim 7, wherein said means for surfacing said direction indicator
2 comprises means for hovering a pointing device over said link.

1 11. The system of Claim 7, wherein said means for installing further includes means for
2 providing the user with a toggle capability to only allow an indicator in one direction.

1 12. The system of Claim 7, wherein said means for installing comprises means for
2 extending an HTML tag language by addition of an attribute for an HTML BODY tag.

1 13. A computer program product recorded on computer readable medium for navigating
2 within a web site, comprising:

3 computer readable means for installing a direction indicator relative to a link shown on a web
4 page within the web site;

5 computer readable means for surfacing said direction indicator prior to selection of said link
6 in order to inform the user whether said link is forward or backward within said web site.

7 14. The program product of Claim 13, wherein said computer readable means for
8 installing a direction indicator includes computer readable means for installing an arrow.

1 15. The program product of Claim 14, wherein said arrow points upward to indicate
2 movement backward and said arrow points downward to indicate movement forward within the web
3 site.

1 16. The program product of Claim 13, wherein said computer readable means for
2 surfacing said direction indicator comprises computer readable means for hovering a pointing device
3 over said link.

1 17. The program product of Claim 13, wherein said computer readable means for
2 installing further includes computer readable means for providing the user with a toggle capability
3 to only allow an indicator in one direction.

1 18. The program product of Claim 13, wherein said computer readable means for
2 installing comprises computer readable means for extending an HTML tag language by addition of
3 an attribute for an HTML BODY tag.

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Abstract**METHOD AND SYSTEM FOR INDICATING DOCUMENT
TRAVERSAL DIRECTION IN A HYPER LINKED
NAVIGATION SYSTEM**

5 A direction indicator for navigating within a web site is installed relative to a link shown on
a web page within the web site. The direction indicator is surfaced prior to selection of the link in
order to inform the user whether the link will take the user forward or backward within the web site.
The direction indicator may comprise an arrow. The arrow points upward to indicate movement
backward within the web site, and the arrow points downward to indicate movement forward within
the web site. The direction indicator may be surfaced by hovering a pointing device over the link.

1006T29-071900

FIG. 1

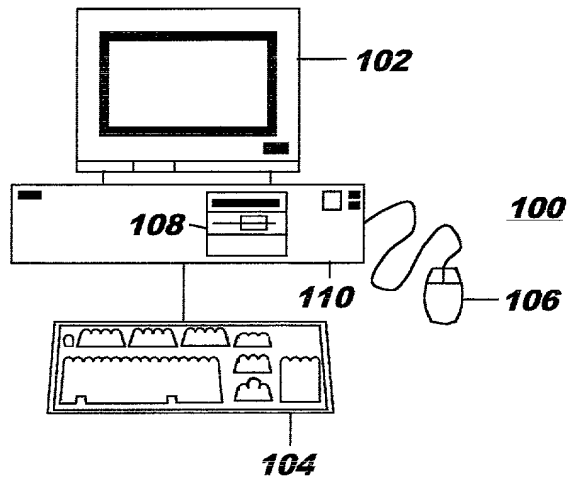
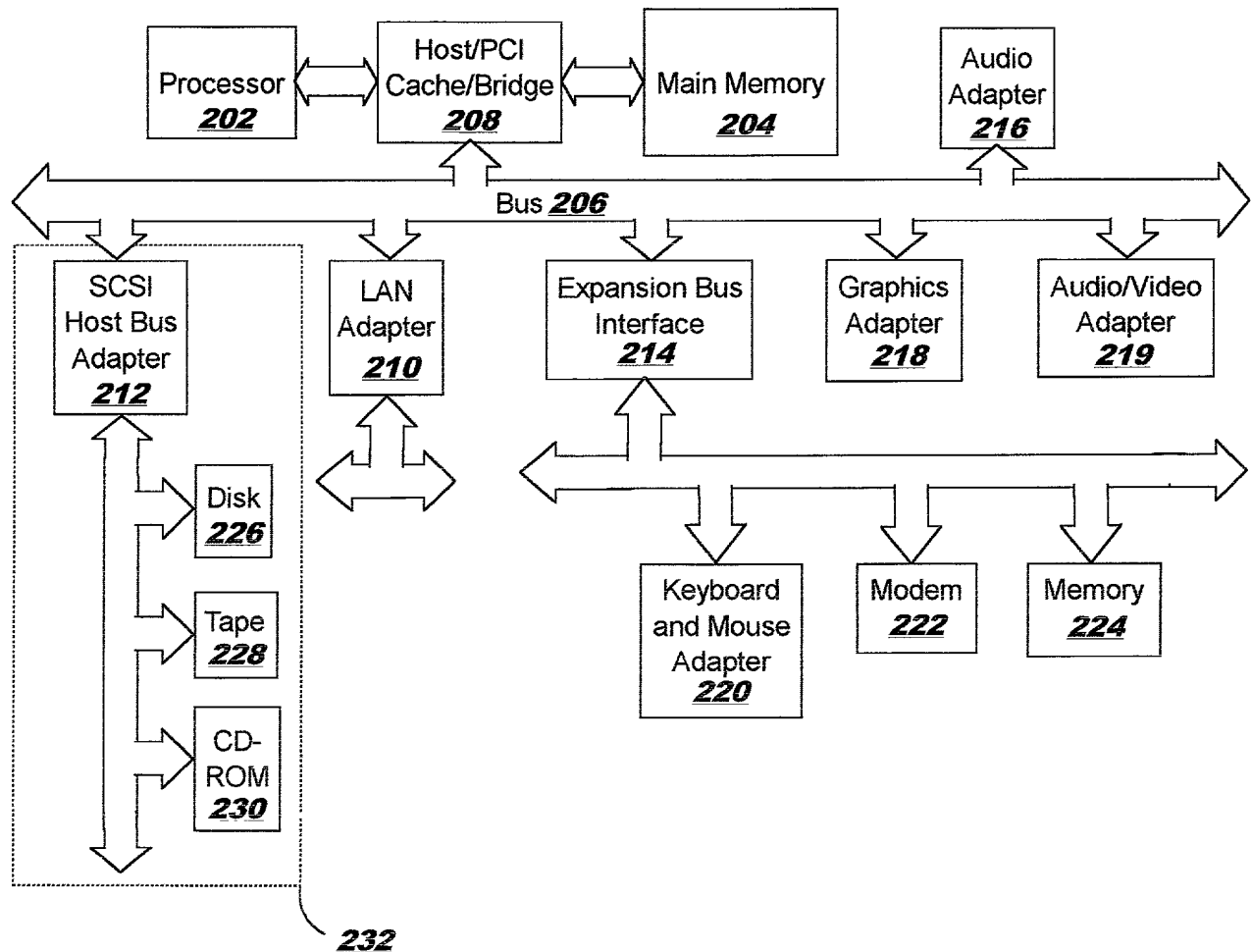


FIG. 2

200



006T40-0556T360

FIG. 3

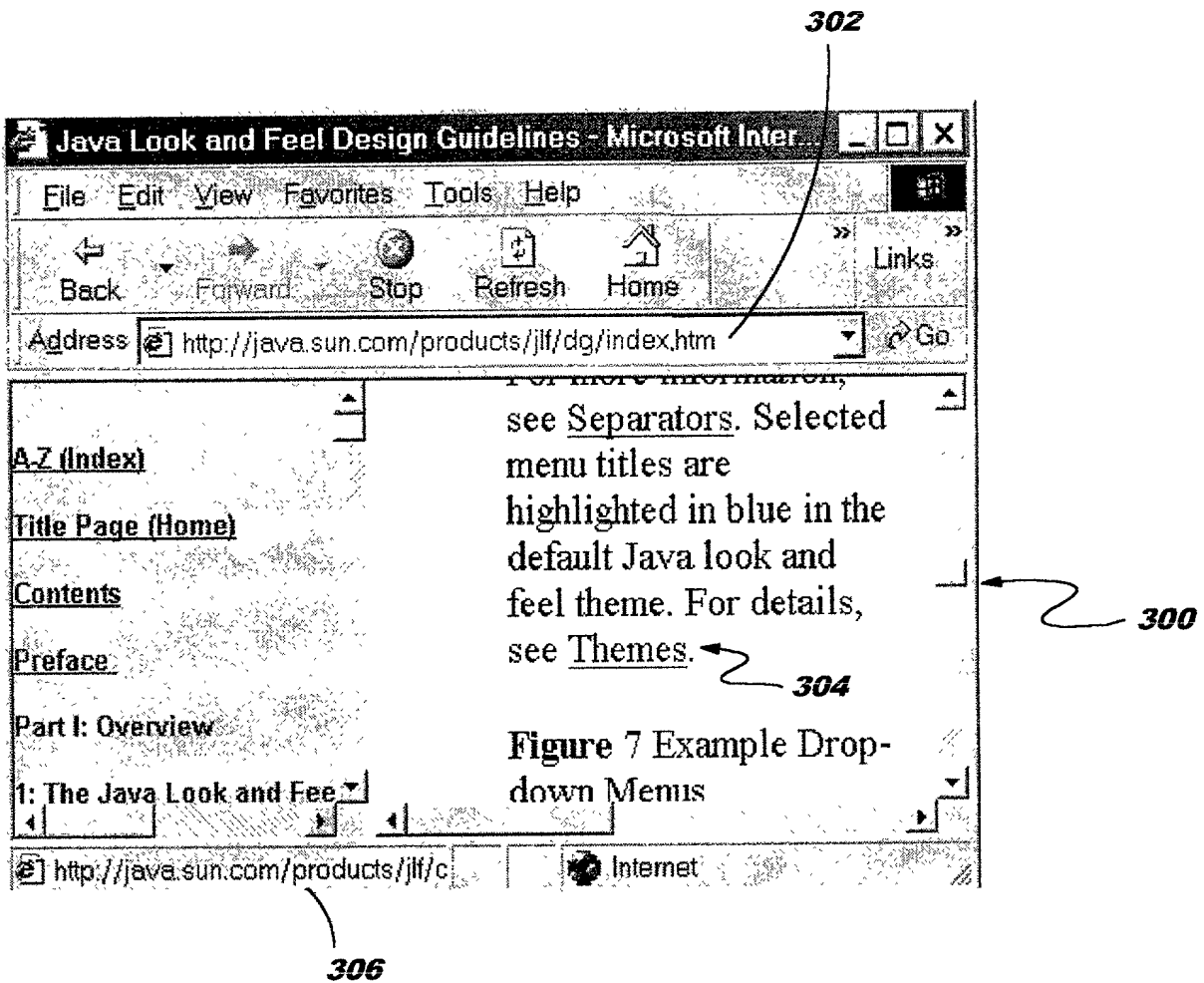
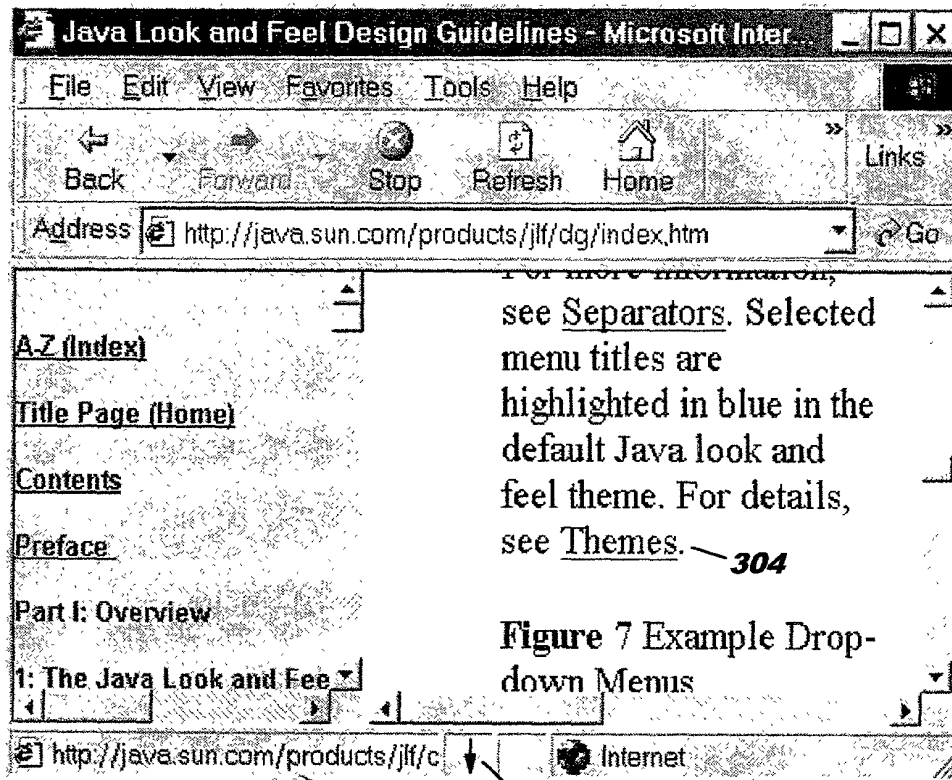


FIG. 4



400

00619555-071900

Declaration and Power of Attorney for Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

METHOD AND SYSTEM FOR INDICATING DOCUMENT TRAVERSAL DIRECTION IN A HYPER LINKED NAVIGATION SYSTEM

the specification of which (check one)



is attached hereto.



was filed on _____ as Application Serial No. _____.

I hereby state that I have reviewed and understand the contents of the above- identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):
Number

Country

Day/Month/Year

Priority Claimed

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information material to the patentability of this application as defined in Title 37, Code of Federal Regulations, §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Prior U.S. Applications:
Serial No.

Filing Date

Status


I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

As a named inventor, I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

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